

Amendment
Serial No. 10/663,661
Attorney Docket No. 031163

AMENDMENTS TO THE DRAWINGS

The attached replacement sheet of drawings includes changes to Fig. 2A.

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REMARKS

Claims 1-7 and 12-19 are pending in the present application and are rejected. Claims 1 and 12-19 are herein amended. Claims 8-11 and 20-24 are herein cancelled without prejudice.

Applicant's Response to Claim Rejections under 35 U.S.C. §102

Claims 1-4 and 12-15 were rejected under 35 U.S.C. §102(b) as being unpatentable over Uemura (U.S. Patent No. 5,495,125).

The Office Action argues that **Uemura** discloses a transmission line as recited by claims 1, 12 and 24. **Uemura** discloses a molded semiconductor device comprised of a mold area 6, a first metal member 2, second metal members 1, a semiconductor chip 3, and metal wires 4. Portions of first metal member 2 are considered to be ground conductors 2a and 2b, while portions of second metal member 1 are considered to be central conductors 1a and 1b. The central conductors 1a and 1b and the ground conductors 2a and 2b are cumulatively considered to be a transmission line. Metal wires 4 connect an end of second metal members 1 with pads 13 and 14 on semi-conductor chip 3. Semiconductor chip 3 is mounted on first metal member 2, in approximately the center of the metal member. See column 1, lines 26-27 and Figure 4.

The Office Action regards mold area 6 as the substrate, second metal member 2 as the first ground pattern, and first metal member 1 as the signal line. In order to overcome the rejection, Applicant amends the independent claims in order to recite that the component is co-planar with the transmission line substrate and does not directly come in contact with the

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transmission line substrate, and that both the component and the transmission line substrate are provided on a common metal frame.

In the pending application, a capacitance C1, shown in Figure 2B, is formed between the metal wire 31 and the metal frame 30. As described in the specification on page five, a capacitance C2, also shown in Figure 2B, is formed between the first ground pattern 23a and the metal wire 31. Capacitance C2 is connected in parallel with capacitance C1, as illustrated in Figure 2C.

In **Uemura**, ground connector 2b is located in between mold area 6 and metal wire 4. However, in **Uemura**, the component 3 is located on top of the first metal member 2 which is located on top of mold area 6. Thus, component 3 is not co-planar with mold area 6. On the other hand, in all embodiments of the present invention, the transmission line substrate 21 is co-planar with the component 10. This can most clearly be seen in the cross-sectional Figures 2B, 4B, 5B, and 6B.

In the present invention, impedance matching between the interface and transmission line 20a can be improved by the capacitance C1 + C2. In contrast, **Uemura** does not show or suggest that the component is co-planar with the transmission line substrate and does not directly come in contact with the transmission line substrate, and that both the component and the transmission line substrate are provided on a common metal frame. As a result, the capacitance C1 cannot be formed in the structure of **Uemura**. Therefore, impedance matching cannot be improved by the capacitance of C1 + C2. Applicant therefore respectfully submits that the claim amendments are sufficient to distinguish over **Uemura**. Favorable reconsideration is respectfully requested.

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Applicant's Response to Claim Rejections under 35 U.S.C. §103

Claims 5 and 16 were rejected under 35 U.S.C. §103(a) as being unpatentable over Uemura.

The Office Action argues that it was well-known to one having ordinary skill in the art to modify **Uemura** by having an arc-shaped portion equally spaced apart from the arc-shaped end, and thus that it would be obvious to provide such a modification. First, Applicant submits that these claims are patentable due to their dependency on claims 1 and 12 as amended above. Secondly, Applicant respectfully argues that the Office Action has provided no basis for the argument that it was well-known to provide arc-shaped ends.

Uemura discloses a signal line 1 with a squared-off end. Because this end is squared-off, it is not equally spaced apart from first metal member 2. It is clear that the distances between these two elements would vary at different locations, such as the corners. **Uemura** contains no suggestion or motivation for a change in the shape of the end of the signal line. Further, the Office Action cites no justification for the argument that such a modification was well known. For at least the foregoing reasons, Applicant respectfully traverses this rejection.

Claims 6, 7, 17 and 18 were rejected under 35 U.S.C. §103(a) as being unpatentable over Uemura in view of Custer et al (U.S. Patent No. 6,473,314).

The Office Action argues that it would have been obvious to one having ordinary skill in the art to modify **Uemura** by providing for a second ground pattern formed on the surface of the transmission line substrate opposite to the surface on which the signal line is formed, and

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connecting these two ground patterns through a hole formed in the transmission line substrate.

First, Applicant respectfully argues that these claims are patentable due to their direct or indirect dependency on claims 1 and 12.

Custer discloses an assembly comprised of three layers 110, 130, and 150, each having a ground plane 113, 136, and 154. These ground planes are connected by holes 149. The Office Action argues the bottom ground plane 154 is formed on the surface of the transmission line substrate opposite to the surface on which input terminals 120a and signal leads 121a are formed, and connected by holes 149. It is unclear what the Office Action regards as the transmission line substrate. Bottom ground plane 154 is on bottom layer 150, while input terminals 120a and signal leads 121a are on top layer 110. Because both of these elements are formed on the top side of different layers, Applicant argues that **Custer** does not disclose a second ground pattern formed on the side opposite of the transmission line substrate.

Moreover, even if **Custer** did disclose a second ground pattern formed on the surface of the transmission line substrate opposite of the surface on which the signal lines are formed, with holes connecting the two ground patterns, Applicant respectfully submits that **Custer** and **Uemura** may not be properly combined. **Uemura** contains no suggestion or disclosure for an additional metal member formed on the side opposite of mold area 6, with holes connecting the two. Additionally, since **Uemura** discloses a sealed molded device, it is questionable whether having a second metal member on the opposite side of mold area 6, in this case on the external side of the device, would even be possible. For at least the foregoing reasons, Applicant respectfully traverses the rejection.

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Claims 8, 9, 20 and 21 are rejected under 35 U.S.C. §103(a) as being unpatentable over Uemura in view of Kadowaki (U.S. Patent No. 5,057,805).

Claims 10, 22 and 23 are rejected under 35 U.S.C. §103(a) as being unpatentable over Uemura in view of Kadowaki and in further view of Custer.

These rejections are now moot, since all of the rejected claims have been cancelled.

For at least the foregoing reasons, the claimed invention distinguishes over the cited art and defines patentable subject matter. Favorable reconsideration is earnestly solicited.

Should the Examiner deem that any further action by applicant would be desirable to place the application in condition for allowance, the Examiner is encouraged to telephone applicant's undersigned agent.

If this paper is not timely filed, Applicant respectfully petitions for an appropriate extension of time. The fees for such an extension or any other fees that may be due with respect to this paper may be charged to Deposit Account No. 50-2866.

Respectfully submitted,
WESTERMAN, HATTORI, DANIELS & ADRIAN, LLP



Ryan B. Chirnomas
Agent for Applicant
Registration No. 56,527
Telephone: (202) 822-1100
Facsimile: (202) 822-1111

RBC/meu
Enclosure: Replacement drawing sheet Fig. 2